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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/023,375

12/18/2001

Lawrence J. DaQuino

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EXAMINER

LAM, ANN Y

ART UNIT

PAPER NUMBER

1641

NOTIFICATION DATE

DELIVERY MODE

01/27/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

IPOPS.LEGAL@agilent.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/023,375	<b>Applicant(s)</b> DAQUINO ET AL.	
	<b>Examiner</b> ANN Y. LAM	<b>Art Unit</b> 1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 29-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 29-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Terminal Disclaimer***

The terminal disclaimer filed on November 7, 2008 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of Patent 7,128,398 has been reviewed and is accepted. The terminal disclaimer has been recorded.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-17 and 29-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al., 5,719,605, in view of of McDevitt et al., 6,713,298.

Applicant claims a printhead comprising a single orifice plate comprising multiple orifices, a plurality of thermal printhead dies each having a top surface comprising a plurality of resistors and is bonded to a surface of the orifice plate wherein the resistors are in alignment with the orifices, and a volume of fluid that includes a biopolymer or precursor.

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Anderson et al. disclose in figure 4 a printhead (48) including a single chip or megachip (50), having multiple cells or banks (21). Megachip 50 is covered with a nozzle plate (30), which includes nozzles or orifices (30a) for the expulsion of ink. Nozzles (30a) may be provided by a single nozzle plate covering all the cells or banks 21 of megachip 50, or may be comprised of multiple nozzle plates corresponding to the number of cells 21. The cells 21 are substantially identical and correspond generally to cells 21 illustrated in figure 2. Figure 3, which is a cross-sectional view of figure 2, shows that the orifices are aligned with the heat resistors (23), (see also col. 5, lines 12-22).

It is disclosed that preferably, multiple single cell patterns of the invention are oriented in vertical alignment, but are offset horizontally such that subsequent columns of cells overlap the space between the vertical ones. In this manner, individual cells can be grouped and expanded to form a larger array of cells, as desired. The overlap allows the array to maintain its density of droplet spacing and permits the single patterns or individual banks to be separated into individual die, if necessary. Column 2, lines 48-56.

Thus, as to claims 1, 29 and 30, Anderson et al. disclose a printhead comprising a single orifice plate (nozzle plate 30) comprising multiple orifices (30a), a plurality of printhead dies (cells or banks 21) each having a top surface comprising a plurality of resistors (23) and is bonded to a surface of the orifice plate, wherein the resistors are in alignment with the orifices (see figures 3 and 4).

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However, Anderson et al. do not teach that the fluid is a biopolymer. McDevitt et al. teach this limitation.

McDevitt et al. teach that an array of biopolymers such as DNA and proteins (col. 4, lines 41-44, and col. 5, lines 10-12, 48-50, and 55-59) can be applied onto a substrate through a dispense head that is made using technology essentially identical to that used in “ink-jet” printer heads (col. 101, lines 26-34.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a sample of DNA or proteins as the fluid in the Anderson et al. printhead because McDevitt et al. teach that providing DNA or proteins in ink-jet printer head technology, such as that taught by Anderson et al., provide the benefit of forming DNA or protein sensor arrays, as would be useful to the skilled artisan in the biotechnology art.

Thus, as to claims 6, 7, 9, 15, 16, 17 and 30, McDevitt et al. teach that the biopolymer is polypeptides or nucleic acids (col. 5, lines 55-58.)

As to claims 2-4, 11-13 and 31-33, Anderson et al. do not disclose that the printhead comprises from 2 to about 10 printhead dies, or 2 to 5 printhead dies, or 3 printhead dies. However, given the general teachings of Anderson et al, the claimed number of printhead dies is within an optimum or workable range and thus its discovery involves only routine skill in the art.

As to claims 5, 14 and 34, each of the printhead dies is a thermal pulse jet printhead die (since it uses resistors.)

As to claim 8, 10, 35, a fluid reservoir is in fluid communication with the firing chamber (see figure 3.)

As to claim 36-41, the printhead dies and the single orifice plate are bonded together (see figure 3.)

As to claim 39-41, the multiple printhead dies (21) are parallel to each other (see fig. 7.)

### ***Response to Arguments***

Applicant's terminal disclaimer of November 7, 2008 has overcome the obviousness double patenting rejection made in the previous Office action. However, upon further review, the above grounds for rejection based on the newly cited art were found to be proper.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANN Y. LAM whose telephone number is (571)272-0822. The examiner can normally be reached on Mon.-Fri. 10-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Shibuya can be reached on 571-272-0806. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ann Y. Lam/  
Primary Examiner, Art Unit 1641